States) has been gathered in adults. Skin tests or a radioallergosorbent test, supplemented by a questionnaire, in adults has shown that 4% of the population has a history of sting reaction, and 20% has evidence of venom-related IgE antibody. Patients with positive skin tests and no history of prior reaction have about a 5% reaction rate to subsequent sting, and those with a history and a positive skin test about a 60% reaction rate. Thus, in adults there is a high incidence of sensitization and a predictable maintenance of responsiveness justifying venom immunotherapy for systemic reactivity.

Similar studies have yet to be fully carried out in children. One prospective analysis of children with mild systemic reactions (urticaria) has found, however, that venom reactivity in children is less fixed than in adults. Thus, instead of a 60% re-reaction rate, a systemic response developed to a second sting in only 10% of children who had a known prior Hymenoptera reaction. Moreover, none of the subsequent reactions were more severe than the initial one. In venom-treated children, the re-reaction rate is less than 10% and the severity of reactions is greatly diminished. Of particular diagnostic difficulty are reactions that ensue after stings in the face and neck, which cause larger local reactions and rapid absorption of venom with the potential for severe but possibly non-IgE-mediated reactions.

At present it is prudent to institute venom immunotherapy for skin test-positive children who have severe systemic reactions to Hymenoptera venom and in those few children whose mild systemic reactions are increasing in severity. The duration of such therapy is currently under study but present practice is to prescribe long-term, potentially lifelong, treatment. For those children manifesting a single mild reaction or repeated but stable or diminishing mild reactions, a watch-and-wait attitude (supplemented by providing an anaphylaxis treatment kit and education in its proper use) has been supported.

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REFERENCES

Schuberth KC, Lichtenstein LM, Kagey-Sobotka A, et al: Epidemiologic study of insect allergy in children—II. Effect of accidental stings in allergic children. J Pediatr 1983 Mar; 102:361-365

Valentine MD: Insect venom allergy: Diagnosis and treatment. J Allergy Clin Immunol 1984 Mar; 73:299-304

Eosinophils

THE EOSINOPHIL is a bone marrow-derived polymorphonuclear leukocyte found in blood (normal level, less than 300 per μl) and tissues in increased numbers primarily in allergic and parasitic disorders. The eosinophilia associated with immune events is T-lymphocyte-dependent and due to bone marrow stimulation by a specific eosinopoietic factor. Localization of the eosinophil to particular target organs is mediated by a variety of factors that selectively chemoattract the eosinophil. These factors include mast cell granule constituents, lymphokines, complement fragments, products of arachidonic acid metabolism (leukotriene B_4, hydroxyeicosatetraenoate [HETE]) and platelet-activating factor (PAF). The unique functions of the eosinophil are a consequence of its special constituents. These include major basic protein (MBP), a 10,000-dalton peptide that comprises 25% of the total granule protein, another cationic peptide (ECP) of 20,000 daltons, a special peroxidase, a neurotoxin and a 17,000-dalton lysophospholipase that can crystallize to form Charcot-Leyden crystals. This latter enzyme and MBP are also found in human basophils.

Eosinophil functions are both homeostatic and inflammatory. In helminth infestations, eosinophils can kill parasite larvae by MBP/ECP and peroxidase-mediated reactions, hasten expulsion of adult worms from the gut and enhance secondary immunity. In allergic reactions, eosinophils are capable of degrading histamine, leukotrienes and ether lipids such as platelet-activating factor, binding heparin and ingesting mast cell granules. Exuberant eosinophil reactions release MBP and induce eosinophil production of PAF and leukotriene C_4. The latter two are potent vasoactive-spasmogenic mediators, whereas MBP can degranulate mast cells and also kill ciliated cells and thereby produce histologic features in the bronchus similar to those seen in cases of asthma.

The ability of glucocorticoids to reduce eosinophil levels may thus underlie some of their clinical efficacy in diseases such as asthma. The development of agent(s) selectively active on eosinophils or on the unique eosinophil functions and constituents should provide another avenue of therapy for diseases such as asthma in which this cell is prominent.

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REFERENCES

Cohen SG, Ottesen EA: The eosinophil, eosinophilia, and eosinophil-related disorders, chap 35, *In* Middleton E Jr, Reed CE, Ellis EF (Eds): Allergy—Principles and Practice, Vol 2, 2nd Ed. St Louis, CV Mosby, 1983, pp 701-769

Weller PF: Eosinophilia. J Allergy Clin Immunol 1984 Jan; 73:1-14

Immunologic Aspects of Cystic Fibrosis

CYSTIC FIBROSIS is a common heritable disease often manifested by cough and wheeze and complicated by a high prevalence of nasal polyps (6% to 24%), which occur at an early age. For these reasons, cystic fibrosis is occasionally confused with respiratory allergy, particularly early in life. A sweat chloride test is always indicated in children with nasal polyps and should be considered in the initial evaluation of very young children who have respiratory signs and symptoms.

Chronic cough, wheezing and hyperirritable airways are common features of both cystic fibrosis and asthma. The two diseases may coexist. Indeed, there is an increased prevalence of atopy in patients who have cystic fibrosis, and the possibility exists that cystic fibrosis predisposes to clinical allergic disease. Certainly the clinical manifestations of allergic respiratory disease are of a more troublesome nature in the presence of cystic fibrosis. Physicians who care for patients with either disease must be constantly alert to the possible presence of the other.

In cases of cystic fibrosis, recurrent and chronic respiratory infections are major problems, particularly